Tropos 5210
Outdoor Mesh Router

TROPOS ®
networks

GREENER, SAFER, SMARTER

FEATURES

Tropos Mesh OS
- Patented Layer 3 mesh routing intelligence
- PWRP dynamically employs links across multiple frequency bands to form the highest throughput
- Supports multiple virtual networks on a single wireless infrastructure
- High-speed, session-persistent roaming
- Dynamic channel assignment, automatic power control and automated data rate selection provide the most efficient use of RF spectrum
- SABRE policy-based routing carries traffic for different applications on different spectrum while supporting dynamic fault tolerance

Secure Management
- User-defined traffic filters
- 802.1x/802.11i/WPA2
- MAC address access control lists
- AES encryption of mesh data and control traffic

Platform
- High-performance 54 Mbps Wi-Fi
- Best-in-class link budget for superior RF propagation
- Ruggedized and weatherized for extreme outdoor conditions
- FIPS 140-2 certified

The Tropos® System Architecture delivers the maximum scalability, high capacity, reliability, and security demanded by customers. The Tropos Architecture combines the innovative and patented Tropos Mesh OS, the industry's most sophisticated metro-scale mesh routing intelligence, with the Tropos operation and optimization tools, which provide centralized visibility, analysis and control, and purpose-built Tropos routers with peerless Wi-Fi radio performance. Tropos' complete solution enables carriers, municipalities and public safety agencies to deliver city-wide fixed and mobile multi-megabit connectivity for IP-based voice, video and data applications.

The Tropos Mesh OS, including the Predictive Wireless Routing Protocol (PWRP™) is the industry's most scalable mesh routing algorithm. The Tropos 5210 outdoor mesh router, utilizing the embedded PWRP, creates a self-organizing and self-healing wireless mesh, and intelligently selects the optimum data path to the wired network. Because the Tropos Mesh OS and PWRP never require more than 5% of available bandwidth, networks can be easily scaled to many thousand nodes without client throughput or network capacity degradation.

The Tropos System Architecture is key to maximizing network economics, as the software, management,and hardware combine to enable the operation of multiple independent networks on a single metro-scale mesh infrastructure. Individual departments can operate independently on the network, segregating information access, applications, and access levels.

Tropos routers require only power and can be deployed anywhere it is available. Each router provides wireless connectivity to standard 802.11b/g clients and extends the coverage area of the metro-scale mesh network.

The ruggedized and weatherized Tropos 5210 is NRTL certified for outdoor installation. It can be mounted on external structures such as buildings or lampposts to quickly implement citywide applications such as utility meter reading and intelligent transportation system.
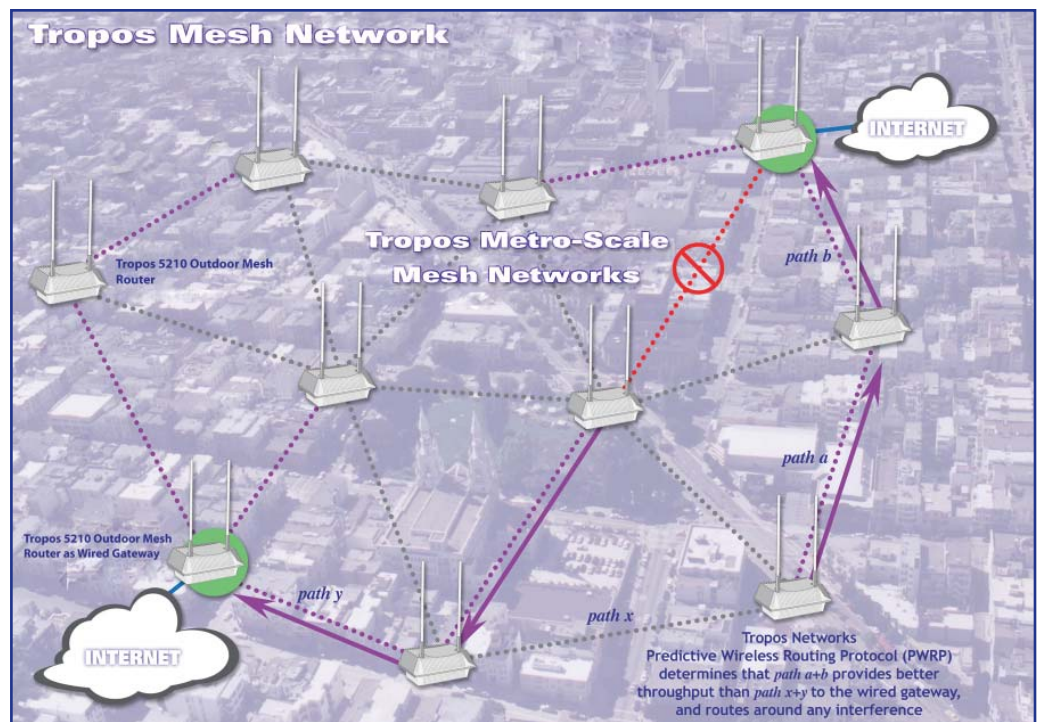

Photo courtesy of NASA Image eXchange.
Image use in no way implies endorsement by NASA of any of the products, services, or materials offered by Tropos Networks, Inc.

Tropos 5210
Outdoor Mesh Router

TROPOS networks
GREENER, SAFER, SMARTER

TECHNICAL SPECIFICATIONS

Wireless
- IEEE 802.11b/g
- Frequency band: 2.4-2.483 GHz
- Modulation: 802.11g - OFDM (64-QAM, 16-QAM, QPSK, BPSK)
                802.11b - DSSS (DBPSK, DQPSK, CCK)
- TX Power: Standard-Power   14dBm-24dBm (EIRP) factory-set in 1dB units
             High-Power   26dBm-36dBm (EIRP) factory-set in 1dB units
- 7.4dBi Omnidirectional antennas
- Media Access Protocol: CSMA/CA with ACK
- RX Sensitivity:

-100dBm @ 1 Mbps	-92dBm @ 12 Mbps
-95dBm @ 2 Mbps	-89dBm @ 18 Mbps
-93dBm @ 5.5 Mbps	-86dBm @ 24 Mbps
-91dBm @ 11 Mbps	-83dBm @ 36 Mbps
-94dBm @ 6 Mbps	-78dBm @ 48 Mbps
-93dBm @ 9 Mbps	-76dBm @ 54 Mbps

- Transmit and Receive diversity

Networking
- TCP and VPN session persistent roaming
- Full 802.11b/g client compatibility
- NAT support
- Layer 2 and Layer 3 support
- DHCP Server and Relay
- Sub-interface support
- Ethernet port

Management
- HTTPS to on-board configuration management tools
- Secure local and remote configuration via HTTPS
- SNMP V2c
- Tropos MIB
- Browser-based management tool
- Simple configuration save and restore
- Network & client monitoring and statistical capture features

Security
- Authentication: 802.11i, WPA, WPA2, 802.1x (including EAP-TLS/TTLS/SIM/PEAP
- Encryption: WEP, TKIP, AES
- AES encryption of mesh and control traffic
- Multiple BSSIDs & ESSIDs (ESSID suppression)
- Full VPN compatibility (VPN filtering—rejects non-VPN traffic)
- MAC address access control lists
- HTTPS only to on-board management tools
- Packet filtering
- FIPS 140-2 certified

Environmental Specifications
- Operating temperature range: -40°C to 55°C
- Storage temperature range: -40°C to 85°C
- Weather rating: IP67 weathertight
- Wind survivability: >165 mph
- Wind loading (165 mph): <300 Newtons
- MIL-STD-810F 509.4 Salt Fog rust resistance compliant
- Shock & vibration: ETSI 300-19-2-4 spec T41.E class 4M3
- Transportation: ISTA 2A

Optional Battery Back-Up (AC models only)
- Factory Installed Li-Ion battery
- Back-up power 4-12 hours typical

Optional Accessories
- Power Cables
  - Street light NEMA photo-electric control power tap 90-480 VAC, 2 wire 4 ft. power cable
  - Street light NEMA photo-electric control power tap 90-480 VAC, 2 wire 20 ft. power cable
  - Electrical power cord, US/Canada 120 VAC, 15 A, 3 prong 6 ft. or 30 ft.
- CAT5 building entrance data protection; network protection unit

Package Contents
- Tropos 5210
- Mounting bracket and accessories
- Hardware Installation and Quick Start Guides

Approvals
- FCC CFR 47 Part 15, Class B
- Industry Canada RSS 210
- Taiwan DGT LP0001/LP0002
- VCCI class B
- ARIB STD-T66
- EN 301 489-17
- EN 300 328
- EN 60 950
- IEC 950
- UL 60950-1
- CSA 22.2 No. 950
- UL 579/IEC 60529 IP67 rated for outdoor use
- UL 1449/IEC 60 664-1
- CE!

Hardware Specifications
- Autosensing 10/100BaseT Ethernet
- Power input (AC models): 90-480VAC 50/60Hz single and split-phase ANSI/IEEE C62.41 category C3 integrated branch circuit protection
- Power input (DC models): 12-60VDC
- Power consumption: 18W typical
- Power over Ethernet power sourcing capability (AC models only): 12VDC @ 14W, 24VDC @12W, 48VDC @ 10W output
- Power-on and network status lamp: Green/Red
- Dimensions (w/o mounting brackets or antennas): 13.00 in (33.02 cm) wide x 8.00 in (20.32 cm) deep x 5.3 in (13.50 cm) high
- Weight: 14 lbs (6.40 kg) max., with mounting brackets

Protection Circuits
- Antenna Protection: ≤ 0.5µJ for 6kV/3kA @ 8/20µS Waveform
- Electrical Protection:
  - ANSI/IEEE C62.41, UL 1449-2nd ed., 10kA @ 8/20 µS Wave form, 36kA per phase, L-L, L-N, L-PE
  - EN61000-4-5 Level 4 AC Surge Immunity
  - EN61000-4-4 Level 4 Electrical Fast Transient Burst Immunity
  - EN61000-4-3 EMC Field Immunity
- Data Protection:
  - EN61000-4-2 Level 4 ESD Immunity

Warranty
- One (1) year on parts and labor; return to point of purchase
- *Optional* standard and premium support packages available

Ordering Information:
Part Number: 52102501
  Tropos 5210 router, Japan TX; two 7.4 dBi omni antennas; bracketry
Part Number: 52102601
  Tropos 5210 router, Japan TX; battery backup; two 7.4 dBi omni antennas; bracketry
Part Number: 52102531
  Tropos 5210 router, ETSI/EU TX; two 7.4 dBi omni antennas; bracketry
Part Number: 52102631
  Tropos 5210 router, ETSI/EU TX; battery backup; two 7.4 dBi omni antennas; bracketry
Part Number: 52103030
  Tropos 5210 router, high power; two 7.4 dBi omni antennas; bracketry
Part Number: 52103130
  Tropos 5210 router, high power; battery backup; two 7.4 dBi omni antennas; bracketry
Part Number: 52106000
  Tropos 5210 router, high power; DC; two 7.4 dBi omni antennas; bracketry
Part Number: 52106060
  Tropos 5210 router, ETSI/EU TX; DC; two 7.4 dBi omni antennas; bracketry
Part Number: FIPS 1402-5210
  Software license, hardware labels for FIPS 140-2

For additional configuration options please contact your Tropos Representative

TROPOS networks

555 Del Rey Avenue • Sunnyvale, CA 94085
phone 408.331.6800 • fax 408.331.6801
www.tropos.com • sales@tropos.com